



Background Paper

Committee: International Atomic Energy Agency

Topic: Use of Nuclear Related Techniques in Nutrition and Agriculture

Chairs: Galilea Gallegos and Rafael Aguilar

The use of nuclear energy has taken two important paths. One of them is the use of peaceful nuclear energy, and the second one is mainly focused on the military area. The International Atomic Energy Agency has been focused for the past years on eradicating poverty by increasing farmers income; increasing productivity by reducing disease and death of animals; ending with worldwide hunger and improving food security and nutrition; using nuclear techniques to ensure water and sanitation management worldwide; reducing the elimination of food caused by any natural deficiency; protecting, rehabilitating, and promoting terrestrial ecosystems and land degradation; stopping the loss of biodiversity.

The use of nuclear power-related to nutrition and agriculture has been one of the most innovative ways to improve it, and some of these nuclear applications relate to radiation techniques to fight diseases and pests, improve crops production, crop quality, livestock production (animals), and protect water and land production. Nuclear techniques have the mission of improving agriculture, ameliorating animal quality, maintaining healthy soil and water, eliminating harmful pests, food quality/safety control system, and crops resistance against climate change. As a consequence of nuclear techniques being used in agriculture and nutrition, production, quality, crop resistance, elimination of pests, lands health, and animal productivity has grown in an exponential way. The IAEA wants to preserve these great processes and improve nuclear techniques related to nutrition and agriculture to prevent and eliminate poverty worldwide, make safe crops, food and improve the land's health and the safety of water, make crops resistant to climate change so vulnerable countries can face this problem and prevent nuclear incidents.

The IAEA considers nuclear energy as an opportunity to upgrade many aspects that are important worldwide and that because of new issues that humans are facing, we need new technologies to address the actual problems such as climate change, overpopulation, poverty, hunger, and many others. The IAEA has established the use of nuclear techniques in agriculture and nutrition, but nuclear technology might be new and in some cases dangerous; that is why this organization along with many other nations have established solutions that were developed upon issues that could be prevented or improved regarding the use of nuclear technics related with nutrition and agriculture.

The Food and Agriculture Organisation is another branch of the United Nations that focuses mainly on defeating world hunger and grants the best quality of food for those that don't have the possibility to have common healthy nutrition. The IAEA and the FAO have been working closely on this issue of the use of nuclear techniques in agriculture and nutrition, to verify and qualify the best and safest food, and techniques quality. It is very important to state that the IAEA and the FAO have established close relations to fight world hunger, food security, livestock health, and the sterilization of pest to reduce its production, but avoiding its extinction in certain areas; all these states have been related with nuclear techniques to facilitate but at the same time have been more able to produce more and better.

Promoting animal productivity and health is one of the IAEA's missions. One example could be the Cameroons case, where they use nuclear technology for efficiency in reproduction, disease control, while breeding and artificial insemination. Thanks to this new use of nuclear technology, farmers in Cameroon were able to triple their milk production from 500 - 1500 liters, and as a consequence, they were able to produce an income of 110 million USD additional to what they already produce in a year.

Pests have been a big and common problem among farmers. Due to this problem, Guatemala, Mexico, and the United States have established a technique that is related to nuclear technology. This technique is known as the "Sterile Insect Technique", and consists of sterilizing medflies to prevent its exponential reproduction. This technique is considered the most environmentally friendly technique used in pest control since the process in which medflies are sterilized is with irradiation from "gamma rays" and "X-rays" and it does not require any genetic modification organism (GMO) process.

In Zambia, livestock represents incomes to approximate 80 percent of the population and 40 percent of agricultural GDP. As it is notorious, livestock represents a lot in this nation, and as a consequence of such importance, the Government of Zambia started working with the IAEA and the FAO to improve and develop their equipment and capacity to diagnose the health of each animal and have the possibility to detect in a quick way if any animal has a disease. Thanks to this development, the Zambia Central Veterinary Research received the ISO 17025 award, which contributed a lot to the confidence of other countries to invest in Zambia livestock.

There has been a new program called the Edible Campus Program. This program has been spreading worldwide, thanks to the solution it promotes. This program aims to use spaces that have been underutilized to produce food, and promote students that are in their practices related to topics such as social, economic, and environmental subjects. The Edible Campus Program is an organization confirmed by diverse groups, but having as the initiator, the Associated Students Department of Public Worms.

The International Atomic Energy Agency has been able to achieve progress in agriculture and nutrition through minimally invasive techniques with the help of the countries gradually overcoming the problems that society is facing today, in addition to helping to achieve Sustainable Development Goals (SDGs).

Works Cited

“About FAO.” *Food and Agriculture Organization of the United Nations*, www.fao.org/about/en/.

“Edible Campus Program.” *UCSB Sustainability*, sustainability.ucsb.edu/ediblecampus.

“Edible Campus.” *Home* -, www.transitionsta.org/local-food/edible-campus/.

“Seven Examples of Nuclear Technology Improving Food and Agriculture.” *Food and Agriculture Organization of the United Nations*, www.fao.org/zhc/detail-events/en/c/1039633/#:~:text=Using%20nuclear%20sciences%20to%20feed%20the%20world&text=Nuclear%20applications%20in%20agriculture%20rely,authenticity%2C%20and%20increase%20livestock%20production.

“Sterile Insect Technique.” *IAEA*, IAEA, 13 Apr. 2016, www.iaea.org/topics/sterile-insect-technique#:~:text=The%20sterile%20insect%20technique%20is,females%20resulting%20in%20no%20offspring.